Customer Number
24024

BEFORE THE BOARD OF APPEALS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	J. Pesik
For	:	**SILICON WAFER BASED MACROSCOPIC MIRROR FOR WIDE ANGLE SCANNING APPLICATIONS**
Application No.	:	10/611,631
Confirmation No.	:	1413
Filed	:	July 1, 2003
Examiner	:	E. Cherry
Art Unit	:	2872
Attorney Docket No.	:	21220.04152 (201AS407A)

Mail Stop Appeal Brief—Patents
Commissioner for Patents
Post Office Box 1450
Alexandria, Virginia 22313-1450

APPELLANTS' BRIEF Under 37 CFR §41.37

Applicants respectfully appeal the final rejection of claims 1–14. A copy of the claims on appeal is set forth in the attached Appendix.

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this **APPELLANTS' BRIEF Under 37 CFR §41.37** for **U.S. Appl. No. 10/611,631** is being transmitted to the United States Patent and Trademark Office (USPTO) via the USPTO's electronic filing system (EFS-Web) on this 24th day of April, 2006.

Brian E. Kondas

Brian E. Kondas {BK1770.DOC;1}

Table of Contents

REAL PARTY IN INTEREST

The real party in interest is ROSEMOUNT AEROSPACE INC., the assignee of record for the entire right, title, and interest in and to the invention of this application. ROSEMOUNT AEROSPACE INC. is a wholly-owned subsidiary of GOODRICH CORPORATION.

RELATED APPEALS AND INTERFERENCES

None

STATUS OF THE CLAIMS

Total Number of Claims in Application: 20

Claims Allowed: None

Claims Withdrawn from Consideration: None

Claims Cancelled: 15–20

Claims Rejected: 1–14

Claims Objected to: None

Claims Indicated Allowable if 35 USC §112 Rejections are Overcome: None

Claims on Appeal: 1–14

STATUS OF AMENDMENTS

A Response to Final Office Action and Request for Reconsideration ("the Response to Final Office Action") was filed December 13, 2005. No amendments were proposed in the Response to Final Office Action. In an Advisory Action issued January 20, 2006, the Examiner indicates the request for reconsideration has been considered but does NOT place the application in condition for allowance.

SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 recites a macroscopic mirror 10 (see ¶31, FIGURE 2D and FIGURES 3A and 3B of the application) for wide angle scanning applications (see ¶25 of the application). The mirror includes a silicon substrate section 10 (see ¶23 and FIGURE 1) of a predetermined shape and macroscopic size cut from a silicon wafer 12 (see ¶23 and FIGURE 1) comprising a flat, polished surface side 14 and an etched, rough surface side 16 (see ¶24 of the application). A plurality of layers 18, 20, 22 (see ¶31 of the application), including a layer of reflective medium 20 (see ¶31 of the application), is disposed on a flat, polished surface of the substrate section 14 (see ¶¶26 and 31 of the application) in a manner to minimize flexural distortion of the flat surface 14 (see ¶26 of the application).

Claim 2 recites the reflective medium 20 is selected for an at least one wavelength of radiation to be reflected thereby (see ¶36 of the application).

Claim 3 recites the reflective medium 20 is selected from the group consisting of gold and silver (see ¶¶26, 28, and 30 of the application).

Claim 4 recites the etched, rough surface side 16 of the silicon substrate 10 serves as a backing plate for bonding the mirror 10 to a scan drive mechanism 30 (see ¶¶25 and 31 of the application).

Claim 5 recites the plurality of layers comprise a bottom primer layer 18, a middle reflective medium layer 20 and a top protective coating layer 22 (see ¶28 of the application).

Claim 6 recites each layer of the plurality of layers is applied by sputtering to a predetermined thickness (see ¶31 of the application).

Claim 7 recites the mirror 10 has a thermal distortion coefficient in the range of 0.020 to 0.032 (see ¶¶33 and 40 of the application).

Claim 8 recites the substrate section 10 is cut from the wafer in the form of an ellipse having a major axis dimension of approximately 70 mm and a minor axis dimension of approximately 50 mm (see ¶31 of the application).

Claim 9 recites the silicon wafer 12 from which the substrate section 10 is cut has a thickness of less than 1 mm (see ¶23 of the application).

Claim 10 recites the substrate section 10 is laser cut from the silicon wafer 12 (see ¶25 of the application).

Claim 11 recites a method of making a macroscopic mirror (see ¶31, FIGURE 2D and FIGURES 3A and 3B of the application) for wide angle scanning applications (see ¶25 of the application). The method includes preparing a silicon wafer 12 (see ¶23 and FIGURE 1) by polishing one side 14 (see ¶31 of the application) to a predetermined flatness and etching the other side 16 to a predetermined roughness (see ¶24 of the application). The method also includes cutting a substrate section 10 from the prepared silicon wafer 12 (see ¶31 of the application) to a predetermined shape and macroscopic size (see ¶23 of the application). The method also includes applying a plurality of layers 18, 20, 22 (see ¶31 of the application), including a layer of reflective medium 20 (see ¶31 of the application), on the flat, polished surface of the substrate section 14 (see ¶¶26 and 31 of the application) in such a manner to minimize flexural distortion of the flat surface 14 (see ¶26 of the application).

Claim 12 recites the substrate section 10 is cut from the silicon wafer 12 in a cookie cutter fashion (see ¶25 of the application).

Claim 13 recites the substrate section 10 is laser cut from the silicon wafer 12 (see ¶25 of the application).

Claim 14 recites the step of applying includes the steps of i) applying a primer layer 18 to a first predetermined thickness on the flat, polished surface of the substrate section 10, ii) applying the reflective medium layer 20 to a second predetermined thickness on the

primer layer 18, and iii) applying a protective coating layer 22 to a third predetermined thickness on the reflective medium layer 20 (see ¶25 of the application).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether **claims 1–6 and 10–14** are unpatentable under 35 USC §103(a) over Tracy et al. (US Patent No. 4,963,012) in view of Yoshizawa et al. (US Patent No. 5,650,353).

Whether **claims 7–9** are unpatentable under 35 USC §103(a) over Tracy et al. (US Patent No. 4,963,012) in view of Yoshizawa et al. (US Patent No. 5,650,353).

ARGUMENT

Rejection of Claims 1–6 and 10 Under 35 USC §103(a) over Tracy et al. (US Patent No. 4,963,012) in view of Yoshizawa et al. (US Patent No. 5,650,353)

Claim 1

Claim 1 recites:

> A macroscopic mirror for wide angle scanning applications comprising:
>
> a silicon substrate section of a predetermined shape and macroscopic size cut from a silicon wafer comprising a flat, polished surface side and an etched, rough surface side; and
>
> a plurality of layers, including a layer of reflective medium, disposed on the flat, polished surface of said substrate section in such a manner to minimize flexural distortion of said flat surface.

Tracy et al. show a heliostat structure equipped with a mirror surface constructed on a metal foil substrate in Figure 7, and an enlarged cross-sectional view of the mirror structure having a metal foil substrate 130 planarized with SiO_2 132 and having a silver 136, SiO_2 interface passivated with a silver nitride layer 134 in Figure 8 according to the invention (see col. 3, lines 57–65). For a more detailed description of Figure 7 refer to col. 8, starting at line 33, and of Figure 8, refer to col. 9, starting at line 43. From the text of column 8, it is clear that the substrate of the mirror structure of Figure 7 is a thin, flexible metallic sheet 130 such as rolled stainless steel, aluminum or copper foil (lines 46–48) and the surface of the metallic layer 130 is coated with a glassy SiO_2 layer 132 by a sol-gel process for coating (lines 49–50). Mirror substrates of polymer plastic sheets are shown in Figures 10 and 12.

Yoshizawa et al. is directed to a method for producing silicon-on-insulator substrates for the semiconductor industry. The method comprises superposing and bonding at least three single crystal silicon wafers through a medium of SiO_2 film formed on each of the wafers (see Abstract). Yoshizawa et al. is directed primarily to semiconductor wafer

technology (see col. 1, starting at line 16). None of Yoshizawa et al.'s processes are related to a mirror or the making thereof.

On pages 2 and 3 of the final Office Action dated October 18, 2005 ("the final Office Action"), the Examiner states:

> Tracy et al. discloses a macroscopic mirror (Fig. 8) comprising:
>
> a silicon substrate (132) of a predetermined shape and macroscopic [size] cut (inherent see Fig. 7) from a silicon wafer;
>
> a plurality of layers (134, 136) including a layer of reflective medium (136) disposed on the silicon substrate in a manner to minimize flexural distortion of the surface (see col. 8, lines 65–68) ....
>
> ...
>
> Tracy et al. does not disclose the silicon substrate that comprises a flat polished surface and an etched rough surface.
>
> Yoshizawa et al. discloses a silicon substrate that comprise a flat polished surface and an etched rough surface (see col. 4, lines 15–15) and the substrate section is cut from the silicon wafer (see column 5). It would have been obvious to one of ordinary skill in the art to use the technique of etching and polishing the silicon wafer before cut as taught by Yoshizawa et al. for the purpose of increasing bonding between the layers while maintaining strong grips between layers using the etched and polished surfaces.

Applicant points out that, in contrast to the prior art techniques and products disclosed in Tracy et al. and Yoshizawa et al., independent **claim 1** of the instant application recites a macroscopic mirror comprising a silicon substrate of a predetermined shape and macroscopic size cut from a silicon wafer. Neither Tracy et al. nor Yoshizawa et al., taken individually or in combination, teach or suggest a macroscopic mirror having a silicon wafer section substrate as recited in **claim 1**. Rather, Tracy et al. teach a flexible, metal foil substrate coated with SiO_2 by a sol-gel process, and Yoshizawa et al. teach the bonding of at least three silicon wafers using a medium of SiO_2 for semiconductor substrates. More specifically, the silicon dioxide (SiO_2) layer 132 of the heliostat 108 of Tracy et al. is not the substrate thereof. Rather, the substrate 130 is a thin flexible

metallic sheet, such as rolled stainless steel or aluminum or copper foil (see col. 3, lines 57–65 and col. 8, lines 46–48).

The SiO_2 layer 132 is not cut from a silicon wafer (i.e., a silicon wafer section). Rather, the SiO_2 layer 132 is coated on the surface of the metallic layer 130 to planarize the surface (col. 8, 22–29 and same col., lines 48–51). The planarization of the surface of the metallic substrate 130 is performed because the rough surface thereof cannot achieve the reflectance requirement desired and needed for the mirror application (see col. 7, lines 36–53). To planarize the surface, the metal foil substrate 130 is dipped into sol-gel, air dried and then heated to boil out the solvent which leaves a thin layer of SiO_2 132 on the surface of the metallic substrate 130 (see col. 8, lines 3–9).

The assertion that the technique of etching and polishing the silicon wafer before cut taught by Yoshizawa et al. for the purpose of increasing bonding between the layers while maintaining strong grips between layers using the etched and polished surfaces may be used in Tracy et al. is not relevant. More specifically, there is no teaching or suggestion in Tracy et al. of a silicon substrate of macroscopic size cut from a silicon wafer (i.e., a silicon wafer section) as noted above. Even if the references were able to be combined as proposed by the Examiner, the technique of etching and polishing of Yoshizawa et al. could only be used on the coated layer 132 of SiO_2 of Tracy et al., albeit it is not clear whether this is even possible. Note also that the silicon substrates of Yoshizawa et al. are not of a macroscopic size, but rather of miniature sizes used for semiconductor substrates. Therefore, the resultant structure would not render **claim 1** obvious.

It is the Examiner's position as noted above that Tracy et al. does not disclose the silicon substrate that comprises a flat polished surface and an etched rough surface, but Yoshizawa et al. discloses a silicon substrate that comprise a flat polished surface and an etched rough surface (see col. 4, lines 15–19) and the substrate section is cut from the silicon wafer (see column 5). The Examiner asserts that it would have been obvious to one of ordinary skill in the art to use the technique of etching and polishing the silicon wafer before cut as taught by Yoshizawa et al. for the purpose of increasing bonding

between the layers while maintaining strong grips between layers using the etched and polished surfaces.

The well established law requires that to combine references for an obviousness rejection under 35 USC. 103(a), there must be a positive suggestion in one or the other of the references to motivate one to form the combination. *In re* Lalu, 223 USPQ 1257, 1258 (Fed. Cir. 1984). Thus, "to use the technique of etching and polishing the silicon wafer before cut as taught by Yoshizawa et al. for the purpose of increasing bonding between the layers while maintaining strong grips between layers using the etched and polished surfaces" in Tracy et al. as proposed by the Examiner is improper since there is no teaching or suggestion of such a silicon wafer substrate in Tracy et al. Likewise, there is no teaching, suggestion or motivation in Yoshizawa et al. to use the silicon-on-insulator substrate as a substrate of a macroscopic mirror. The only suggestion and motivation of such a combination is in Applicant's teaching of the instant application and it is impermissible to use Applicant's own teachings to combine references. In *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 221 USPQ 929, 933 (Fed. Cir. 1984) the court stated:

> The Court below identified no source, other than the ... patent itself, for the suggestion to use override switching means in a television rental system.
>
> Obviousness cannot be established by combining the teaching of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teaching of references can be combined only if there is some suggestion or incentive to do so.

The level of ordinary skill in the art at the time the invention was made may only be established by evidence, like the two references cited by the Examiner. The person of ordinary skill in the art is a hypothetical person who is presumed to be aware of all the pertinent prior art. *Custom Accessories Inc. v. Jeffrey-Allan Indus., Inc.*, 1 USPQ2d 1196, 1201 (Fed. Cir. 1986). The determination of the level of skill establishes the frame of reference for analyzing obviousness from the perspective of the person of ordinary skill in the art. *Armament Sys. & Procedures, Inc. v. Monadnock Lifetime Prods., Inc.*, Civ. Application. 97-1174, slip op. at 17 (Fed. Cir. Aug. 7, 1998) (unpublished). The

pertinent field of art relating to the subject matter is determined by the nature of the problem confronting the inventor. *Orthopedic Equip. Co. v. United States*, 217 USPQ 193, 196 (Fed. Cir. 1983). As noted above, the teaching and/or suggestion of Tracy et al. and Yoshizawa et al. themselves do not provide the necessary and sufficient level of ordinary skill to permit a combination thereof. They are not even in the same art area—Tracy et al. pertaining to the art of macroscopic mirrors and Yoshizawa et al. pertaining to miniature substrates for the semiconductor industry. Accordingly, Applicant asserts that the Examiner has not shown the necessary and sufficient evidence of a level of ordinary skill which can permit a combination of the cited references free from the knowledge gleaned from the Applicant's disclosure. Therefore, the cited combination is improper.

For at least these reasons, independent **claim 1** is patentably distinguishable over Tracy et al. and Yoshizawa et al., either taken individually or in combination.

Claim 2

Claim 2 recites "[t]he macroscopic mirror of claim 1 wherein the reflective medium being selected for an at least one wavelength of radiation to be reflected thereby."

On page 2 of the final Office Action, the Examiner states "the reflective medium being selected for an at least one wavelength of radiation to be reflected thereby (inherent [Tracy et al.] 136 is silver)".

Applicant takes the position that **claim 2** is patentably distinguishable over the cited prior art for the same reasons given for the parent **claim 1** given above.

Claim 3

Claim 3 recites "[t]he macroscopic mirror of claim 1 wherein the reflective medium is selected from the group consisting of gold and silver."

The Examiner has not explicitly stated a position regarding **claim 3**. In *Ex parte* Humphreys, (24 USPQ2d 1255, 1262 (B.P.A.I. 1992)), the Board reversed an Examiner's rejection stating:

> [t]he examiner's rejection is not specific as to how one of ordinary skill in the art would have found it obvious to practice any specific method within the scope of these claims .... In this regard, we note that the examiner has not explained with any specificity on this record how [the first reference] ... would have suggested in combination with [the second reference] the methods set forth by these claims.

Therefore, Applicant requests the rejection of **claim 3** be reversed.

In addition, Applicant takes the position that **claim 3** is patentably distinguishable over the cited prior art for the same reasons given for the parent **claim 1** given above.

Claim 4

Claim 4 recites "[t]he macroscopic mirror of claim 1 wherein the etched, rough surface side of the silicon substrate serves as a backing plate for bonding the mirror to a scan drive mechanism."

On page 3 of the final Office Action, the Examiner states "[a] side of the silicon substrate serves as a backing plate for bonding the mirror to a scan drive mechanism (see [Tracy et al.] column 1, lines 61–65)".

Applicant takes the position that the citation of Tracy et al. col. 1, lines 61–65 is directed to substrates of flexible rolled metal, and not to silicon substrates as implied. The substrate 130 of Tracy et al. is not a silicon substrate cut from a silicon wafer as noted above and the side of the substrate 130 which bonds the heliostat 108 to the supporting structure 112, 116 is not an etched, rough surface. Therefore, Tracy et al. fails to teach the etched, rough surface side of a silicon substrate serving as a backing plate for bonding a mirror to a scan drive mechanism, as recited in claim 4. Combinations that require substantial reconstruction and redesign of the elements of the references are not proper

grounds for rejection. See *In re* Ratti, 123 USPQ 349, 352 (C.C.P.A. 1959). Furthermore, the court stated:

> Once appellant had taught how [the invention] could be done, the redesign may, by hindsight, seem to be obvious to one having ordinary skills in the ... art. However, when viewed as of the time appellant's invention was made, and without the benefit of appellant's disclosure, we find nothing in the art of record which suggests appellant's novel [invention] as defined in [the] claims ....

Id.

For the reasons discussed above, Applicant takes the position that the combination of Tracy et al. and Yoshizawa et al. is improper with regard to the rejection of **claim 4**. Furthermore, Applicant states **claim 4** is patentably distinguishable over the cited prior art for these reasons and for the same reasons given for the parent **claim 1** given above.

Claim 5

Claim 5 recites "[t]he macroscopic mirror of claim 1 wherein the plurality of layers comprise a bottom primer layer, a middle reflective medium layer and a top protective coating layer."

On page 3 of the final Office Action, the Examiner states "the plurality of layers are a bottom prime layer (130), a middle reflective layer (136) and a top protective coating layer (Fig. 9, 138 and col. 9, lines 1–5)".

Applicant takes the position that **claim 1** recites "a plurality of layers, including a layer of reflective medium, disposed on the flat, polished surface of said substrate section" which is a limitation that is included in dependent **claim 5**. For the sake of argument, if the silicon substrate of Tracy et al. is the layer 132 as asserted by the Examiner, then layer 130 cannot be the bottom prime layer of the plurality as recited by dependent **claim 5** because it is not disposed on the asserted substrate layer 132 as recited by **claim 1**. Actually, Tracy et al. do not teach or suggest a silicon substrate cut from a silicon wafer as noted above, and therefore, the plurality of layers 134, 136 and 138 taught by Tracy et

al. are not disposed on a silicon wafer section substrate. As discussed above with reference to **claim 4**, combinations that require substantial reconstruction and redesign of the elements of the references are not proper grounds for rejection. See *In re* Ratti at 352. Because Tracy et al. fails to teach or suggest a silicon substrate cut from a silicon wafer, Applicant takes the position that the combination of Tracy et al. and Yoshizawa et al. is improper.

Furthermore, Applicant states **claim 5** is patentably distinguishable over the cited prior art for these reasons and for the same reasons given for the parent **claim 1** given above.

Claim 6

Claim 6 recites "[t]he macroscopic mirror of claim 5 wherein each layer of the plurality of layers is applied by sputtering to a predetermined thickness."

On page 3 of the final Office Action, the Examiner states "each layer of the plurality is sputtered to a predetermined thickness (see [Tracy et al.] Fig. 9)."

Applicant takes the position that the Examiner's reference to Figure 9 and the associated text of Tracy et al. is not dispositive of the obviousness issue regarding **claim 6**. Tracy et al. merely describe depositing the layers 134, 136 and 138 in the specification at the bottom of col. 8 and top of col. 9 where Figure 9 is described and do not teach or suggest sputtering the layers to a predetermined thickness. Therefore, Applicant takes the position that **claim 6** is patentably distinguishable over the cited prior art for these reasons as well as for the same reasons given for the parent **claim 1** given above.

Claim 10

Claim 10 recites "[t]he macroscopic mirror of claim 1 wherein the substrate section is laser cut from the silicon wafer."

The Examiner has not explicitly stated a position regarding **claim 10**. Therefore, for the reasons discussed above with reference to **claim 3**, Applicant requests the rejection of **claim 10** be reversed.

As noted above, neither Tracy et al. nor Yoshizawa et al. teach or suggest a silicon substrate of a heliostat cut from a silicon wafer. Thus, neither Tracy et al. nor Yoshizawa et al. teach or suggest a silicon wafer that is laser cut from a silicon wafer. Consequently, Applicant takes the position that **claim 10** is patentably distinguishable over the cited prior art for these reasons as well as for the same reasons given for the parent **claim 1** given above.

Rejection of Claims 11–14 Under 35 USC §103(a) over Tracy et al. (US Patent No. 4,963,012) in view of Yoshizawa et al. (US Patent No. 5,650,353)

Claim 11 recites:

> A method of making a macroscopic mirror for wide angle scanning applications comprising:
>
> preparing a silicon wafer by polishing one side to a predetermined flatness and etching the other side to a predetermined roughness;
>
> cutting a substrate section from the prepared silicon wafer to a predetermined shape and macroscopic size; and
>
> applying a plurality of layers, including a layer of reflective medium, on the flat, polished surface of said substrate section in such a manner to minimize flexural distortion of said flat surface.

Claim 12 recites "[t]he method of claim 11 wherein the substrate section is cut from the silicon wafer in a cookie cutter fashion."

Claim 13 recites "[t]he method of claim 11 wherein the substrate section is laser cut from the silicon wafer."

Claim 14 recites:

> The method of claim 11 wherein the step of applying includes the steps of:
>
> applying a primer layer to a first predetermined thickness on the flat, polished surface of the substrate section;
>
> applying the reflective medium layer to a second predetermined thickness on the primer layer; and

applying a protective coating layer to a third predetermined thickness on the reflective medium layer.

On page 3 of the final Office Action, the Examiner states "[t]he method of making the mirror is inherently met by the disclosure of the prior art."

Applicant takes the position that the disclosure set forth in the references Tracy et al. and Yoshizawa et al. do not inherently meet the method of making a macroscopic mirror as recited in **claims 11–14**. More specifically, it has been shown that neither Tracy et al. nor Yoshizawa et al. teach or suggest "cutting a substrate section from the prepared silicon wafer to a predetermined shape and macroscopic size" for a macroscopic mirror. In addition, neither Tracy et al. nor Yoshizawa et al. teach or suggest that a substrate section for a macroscopic mirror is cut from the silicon wafer in a cookie cutter fashion (**claim 12**) or is laser cut from the silicon wafer (**claim 13**). Also, since no silicon substrate of macroscopic size cut from a silicon wafer is taught or suggested from the prior art, then the steps of applying the primer, reflective medium and protective coating layers on the silicon substrate (**claim 14**) are not met by the prior art.

As discussed above, combinations that require substantial reconstruction and redesign of the elements of the references are not proper grounds for rejection. See *In re* Ratti at 352. Therefore, the combination of Tracy et al. and Yoshizawa et al. for rejecting **claims 11–14** is improper.

For at least the reasons discussed above, **claims 11–14** are patentably distinguishable over the references of Tracy et al. and Yoshizawa et al.

Rejection of Claims 7–9 Under 35 USC §103(a) over Tracy et al. (US Patent No. 4,963,012) in view of Yoshizawa et al. (US Patent No. 5,650,353)

Claim 7 recites "[t]he macroscopic mirror of claim 1 wherein the mirror has a thermal distortion coefficient in the range of 0.020 to 0.032."

Claim 8 recites "[t]he macroscopic mirror of claim 1 wherein the substrate section is cut from the wafer in the form of an ellipse having a major axis dimension of approximately 70 mm and a minor axis dimension of approximately 50 mm."

Claim 9 recites "[t]he macroscopic mirror of claim 1 wherein the silicon wafer from which the substrate section is cut has a thickness of less than 1 mm."

On page 4 of the final Office Action, the Examiner states "Tracy et al. in view of Yoshizawa et al. discloses the claimed invention as set forth above except [the] dimensions of thermal distortion coefficient, thickness or dimension of the silicon substrate. It would have been obvious to one of ordinary skill in the art to choose these dimensions since it has been held that discovering ... optimum values only involves routine skill in the art."

Applicant takes the position that it has been shown above that Tracy et al. in view of Yoshizawa et al. do not disclose the claimed invention of **claim 1** from which **claims 7–9** are dependent. Thus, Applicant takes the position that **claims 7–9** are patentably distinguishable over the cited prior art for the same reasons given for the parent **claim 1** given above.

In addition, the position taken by the Examiner regarding **claims 7–9** appears to be a statement of conclusion without evidentiary support from the references. Conclusory statements are inadequate to support a finding of motivation to combine prior art references for a proper obviousness rejection. See *In re* Beasley, Civ. Application. 04-1225, slip op. at 6–7, 2004 WL 2793170 (Fed. Cir. Dec. 7, 2004). Therefore, Applicant requests that the rejection involving **claims 7–9** be withdrawn.

For the reasons discussed above, as well as for the same reasons given for the parent **claim 1** given above, Applicant takes the position that **claims 7–9** patentably distinguishable over the cited prior art.

Conclusion

For the reasons stated above, the rejections involving claims 1–14 should be withdrawn.

Should the Commissioner decide that any additional fee or fee deficiency is due with this Appeal Brief, the Commissioner is hereby authorized to charge any and all such other fees, or credit any overpayments, incurred as a result of entering this Appeal Brief to Deposit Account Number 03-0172.

Respectfully submitted,

CALFEE, HALTER & GRISWOLD LLP

Brian E. Kondas
Reg. No. 40,685
Customer No. 24024
(216) 622-8308

CLAIMS APPENDIX

1. A macroscopic mirror for wide angle scanning applications comprising:

a silicon substrate section of a predetermined shape and macroscopic size cut from a silicon wafer comprising a flat, polished surface side and an etched, rough surface side; and

a plurality of layers, including a layer of reflective medium, disposed on the flat, polished surface of said substrate section in such a manner to minimize flexural distortion of said flat surface.

2. The macroscopic mirror of claim 1 wherein the reflective medium being selected for an at least one wavelength of radiation to be reflected thereby.

3. The macroscopic mirror of claim 1 wherein the reflective medium is selected from the group consisting of gold and silver.

4. The macroscopic mirror of claim 1 wherein the etched, rough surface side of the silicon substrate serves as a backing plate for bonding the mirror to a scan drive mechanism.

5. The macroscopic mirror of claim 1 wherein the plurality of layers comprise a bottom primer layer, a middle reflective medium layer and a top protective coating layer.

6. The macroscopic mirror of claim 5 wherein each layer of the plurality of layers is applied by sputtering to a predetermined thickness.

7. The macroscopic mirror of claim 1 wherein the mirror has a thermal distortion coefficient in the range of 0.020 to 0.032.

8. The macroscopic mirror of claim 1 wherein the substrate section is cut from the wafer in the form of an ellipse having a major axis dimension of approximately 70 mm and a minor axis dimension of approximately 50 mm.

9. The macroscopic mirror of claim 1 wherein the silicon wafer from which the substrate section is cut has a thickness of less than 1 mm.

10. The macroscopic mirror of claim 1 wherein the substrate section is laser cut from the silicon wafer.

11. A method of making a macroscopic mirror for wide angle scanning applications comprising:

preparing a silicon wafer by polishing one side to a predetermined flatness and etching the other side to a predetermined roughness;

cutting a substrate section from the prepared silicon wafer to a predetermined shape and macroscopic size; and

applying a plurality of layers, including a layer of reflective medium, on the flat, polished surface of said substrate section in such a manner to minimize flexural distortion of said flat surface.

12. The method of claim 11 wherein the substrate section is cut from the silicon wafer in a cookie cutter fashion.

13. The method of claim 11 wherein the substrate section is laser cut from the silicon wafer.

14. The method of claim 11 wherein the step of applying includes the steps of:

applying a primer layer to a first predetermined thickness on the flat, polished surface of the substrate section;

applying the reflective medium layer to a second predetermined thickness on the primer layer; and

applying a protective coating layer to a third predetermined thickness on the reflective medium layer.

EVIDENCE APPENDIX

Copies of the references listed below are provided in the Appendices following this page:

Exhibit	U.S. Patents
A:	US Patent No. 4,963,012, Tracy et al.
B:	US Patent No. 5,650,353, Yoshizawa et al.
	U.S. Citations
C:	*In re* Lalu, 223 USPQ 1257, 1258 (Fed. Cir. 1984)
D:	*ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 221 USPQ 929, 933 (Fed. Cir. 1984)
E:	*Custom Accessories Inc. v. Jeffrey-Allan Indus., Inc.*, 1 USPQ2d 1196, 1201 (Fed. Cir. 1986)
F:	*Armament Sys. & Procedures, Inc. v. Monadnock Lifetime Prods., Inc.*, Civ. Application. 97-1174, slip op. (Fed. Cir. Aug. 7, 1998) (unpublished)
G:	*Orthopedic Equip. Co. v. United States*, 217 USPQ 193, 196 (Fed. Cir. 1983)
H:	*Ex parte* Humphreys, (24 USPQ2d 1255, 1262 (B.P.A.I. 1992))
I:	*In re* Ratti, 123 USPQ 349, 352 (C.C.P.A. 1959)
J:	*In re* Beasley, Civ. Application. 04-1225, slip op. at 6–7, 2004 WL 2793170 (Fed. Cir. Dec. 7, 2004)

RELATED PROCEEDINGS APPENDIX

None